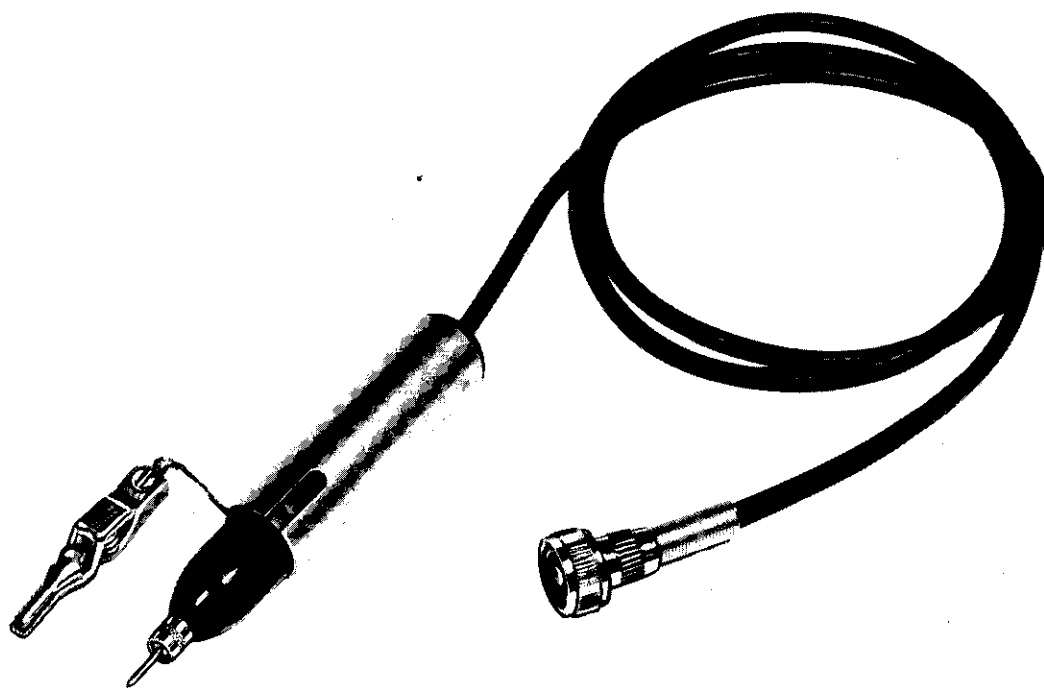


knight-kit

**ASSEMBLY
MANUAL**



RF PROBE

REFER TO THIS NUMBER WHEN
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REQUIRING SERVICE OR PARTS

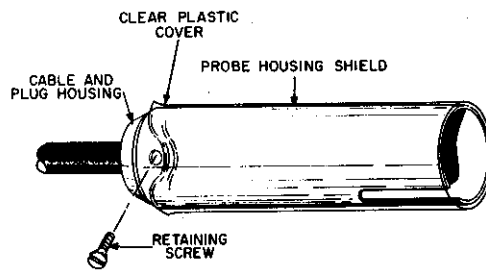
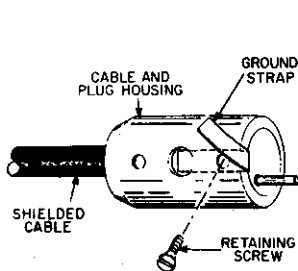
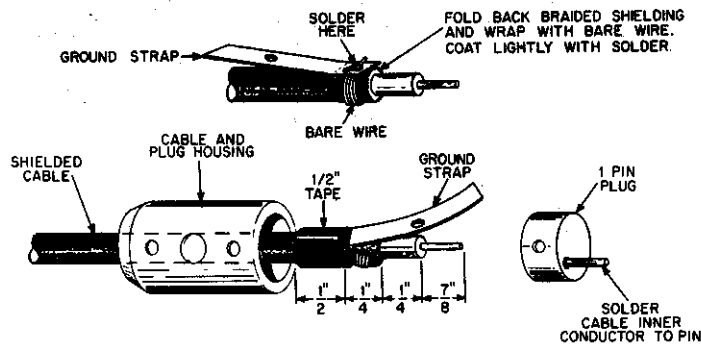
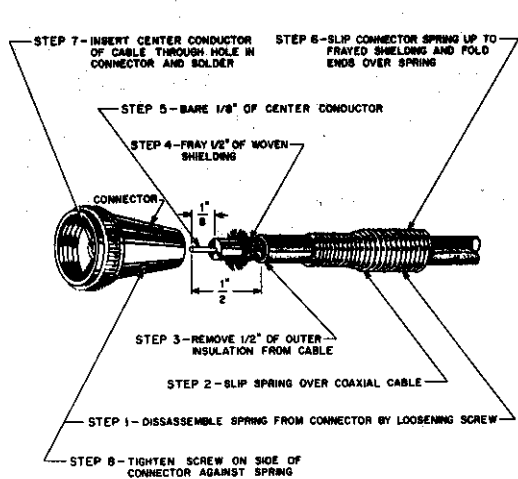


FIGURE 1. HOW TO PREPARE THE CABLE

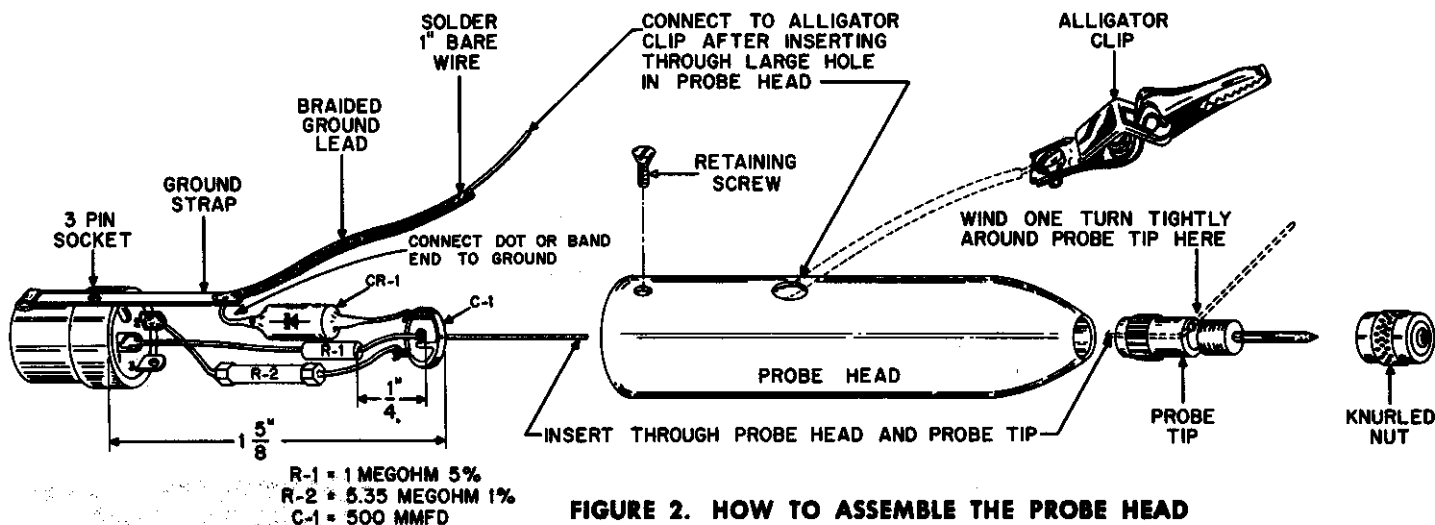
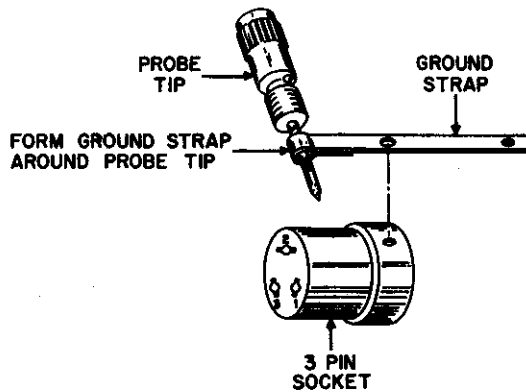
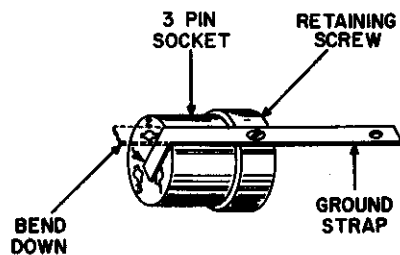


FIGURE 2. HOW TO ASSEMBLE THE PROBE HEAD

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THE KNIGHT RF PROBE

The KNIGHT RF Probe extends the working range of a VTVM to 250 megacycles. A multiple purpose head permits the probe to be used for both RF and DC measurements by merely rotating the head of the probe. The probe is shielded and the connecting cable is flexible and shielded.

When you unpack your probe kit, check all of the parts against the Parts List. Study the diagrams so you understand the assembly of the parts.

USE ONLY ROSIN CORE SOLDER. KITS WIRED WITH ACID CORE SOLDER OR ACID FLUX WILL CORRODE AND WILL NOT WORK LONG. SUCH KITS ARE NOT ELIGIBLE FOR REPAIR OR SERVICE.

You are ready to assemble your kit.

SEE FIGURE 1.

- Attach the connector to one end of the cable as shown in Figure 1.
- Slide the cable and plug housing over the other end of the cable. Remove $1\frac{1}{8}$ " of the outer insulation from the end of the cable. Unravel the shielded braid and fold it back over the cut off insulation. Wrap four turns of a 4" bare wire around the folded back braid. Lay the ground strap flat against the cable. Pass each end of the bare wire through the small hole in the end of the ground strap, and form a hook in each end to hold it in position. Coat the bare wire lightly with solder. Solder the ground strap securely to the bare wire. **DO NOT USE TOO MUCH HEAT** or the inner cable insulation will melt.
- Remove $\frac{7}{8}$ " insulation from the inner conductor. Solder it securely to the 1-pin plug.
- Bend the ground strap back on itself so the other hole in it lines up with the hole in the 1-pin plug.
- Wrap the 4" length of tape (it is wound on the probe housing shield) around the cable as shown to provide strain relief.
- Slide the cable and plug housing down over the assembly. Tighten, one of the retaining screws into the small hole nearest the 1-pin plug. Bend the ground strap back over the housing.
- Insert the end of the probe housing shield (with the small hole in it) over the cable and plug housing. Slide the plastic cover back slightly. Tighten a retaining screw through the shield into the housing.

SEE FIGURE 2.

- Form the ground strap as shown.
- Pass one lead of R-1, 1 megohm, 5% resistor, through C-1, the 500 MMFD button-type, feed-

through capacitor. The body of R-1 **MUST BE** $\frac{1}{4}$ " from the body of C-1. Solder this lead to C-1. The spacing between the front of C-1 and the terminal side of the socket must be $1\frac{1}{8}$ ". Solder the other lead to terminal 1 of the socket.

- Position R-2, 5.35 megohm, 1% precision resistor, as shown. Solder one lead to one of the terminals on the outer edge of C-1. Solder the other lead to terminal 2 of the 3-pin socket.
- Solder the unmarked end of CR-1, the crystal diode, to terminal 2 of C-1. Connect, but do not solder, the other lead to the ground strap.
- Solder a 1" bare wire to one end of the braided ground lead. The other end will be connected to the alligator clip later.
- Solder the other end of the braided ground lead to the ground strap as shown.
- Insert the assembly of the resistors, capacitor, and crystal diode into the probe head. Bring the ground lead out through the large hole, and fasten the bare wire under the screw of the alligator clip.
- Pass the bare wire coming through C-1 out the small hole in the probe tip. Insert the probe tip into the probe head. Wind one turn around the base of the tip. Tighten the knurled nut very securely.
- Secure the 3-pin socket in the probe head with the other retaining screw.
- Choose the function you desire and plug the probe head into the housing.

You have finished your KNIGHT RF Probe. Check all of the work. Be sure the dimensions are as shown in the figures.

USING THE RF PROBE

The KNIGHT RF Probe may be used to measure RF voltages up to 25 volts rms in circuits where the DC voltage is as high as 300 volts. Read the voltages on the DC or rms scales. The RF voltage has been rectified and calibrated to correspond to a DC voltage which is proportional to the peak of the original RF voltage.

The frequency range is from 50 KC to 250 MC. The accuracy is $\pm 10\%$ within the given frequency range.

The KNIGHT RF Probe uses a germanium diode, CR-1, to rectify the RF voltage or current to DC. C-1, the 500 MMFD capacitor, charges to a voltage approximately equal to the peak of the signal voltage being measured, and also prevents any DC in the circuit under test from getting into the probe. R-2, the 5.35 megohm, 1% precision resistor, serves two purposes: Calibration and RF isolation.

R-1, the 1 megohm resistor, is the isolation resistor, which replaces the isolation resistor in the DC test lead so that it is not necessary to change back and forth from the DC test lead to the RF Probe.

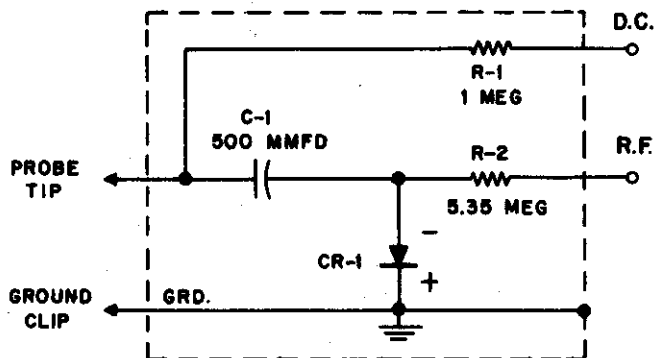


FIGURE 3. SCHEMATIC DIAGRAM, KNIGHT RF PROBE

PARTS LIST

SYMBOL NUMBER	DESCRIPTION	PART NO.
R-1	Resistor, 1 Megohm, 1/2 watt, 5%	302105
R-2	Resistor, 5.35 Megohm, 1/2 watt, 1%	345356
C-1	Capacitor, 500 MMFD, button-type feed-through ceramic	296003
CR-1	Diode, crystal, germanium, 705A or 1N34A only	630001 or 630002

QUANTITY	DESCRIPTION	PART NO.
48"	Cable, shielded, RG-58/U	803001
1 ea.	Clip, alligator	532005
1 ea.	Connector, cable	502224
1 ea.	Head, probe	870014
1 ea.	Housing, cable and plug	870016
1 ea.	Manual, instruction	750010
1 ea.	Plug, 1-pin	502130
3 ea.	Screw, retaining	563230
1 ea.	Shield, housing, with plastic cover	470052
2 1/2"	Shielding, braid	804003
1 ea.	Socket, 3-pin	502230
1/2"	Solder, rosin-core	930007
2 ea.	Strap, ground	470048
4"	Tape, 1/2"	811001
1 ea.	Tip, probe	502118
5"	Wire, #20, bare	806005

INSPECTION SERVICE

You may return your completed Knight-Kit for inspection and repair within one year from purchase for a service charge of \$1.00. for this particular kit. An additional charge will be made for parts damaged in construction.

Kits not completely wired or which require extensive re-work will incur an additional labor charge. You will be notified of these charges prior to our repairing your kit.

No service charge will be made for a period of 90 days from date of purchase, if malfunctioning of the completed kit is due to a defective part.

Service charges for kits returned after the one year period will be on a time and materials basis.

PACKING INSTRUCTIONS

Should you find it necessary to return your Knight-Kit, be sure to pack it carefully. The original carton should be used, if available. If not, a sound carton of similar size may be used. Cushion your Knight-Kit tightly using plenty of packing material. Mark: FRAGILE-DELICATE ELECTRONIC EQUIPMENT.

SHIPPING INSTRUCTIONS

Ship your unit by Parcel Post Insured. Please include remittance to cover repair costs plus return postage and insurance. Postage and insurance may be estimated by referring to the "how to order page" in our catalog. This will save you costly COD fees; any excess remittance will be refunded.

When you return a kit please enclose your order papers and a letter explaining why you are returning the unit. On the front of the package print "FIRST CLASS LETTER ENCLOSED" and apply postage on the package for the enclosed letter.

ADDRESS CORRESPONDENCE AND RETURN KITS TO:

KNIGHT ELECTRONICS CORP. • Knight-Kit Service Department
2100 Maywood Drive • Maywood, Illinois

KNIGHT-KIT PARTS WARRANTY

Allied guarantees that only premium-quality parts are selected for use in Knight-Kits. Every Knight-Kit part is fully warranted for a period of one year from date of purchase against defects in material and workmanship. Prompt No-Charge replacements of defective parts will be made.